

Application Serial No: 10/562,319
Responsive to the Office Action mailed on: August 9, 2007

REMARKS

This Amendment is in response to the Office Action mailed on August 9, 2007.
Claim 3 is amended editorially to fix a grammatical error. No new matter is added.
Claims 1-20 are pending.

Drawing Objections:

The drawings are objected to as failing to include reference numbers mentioned in the specification. In particular, reference number 103 is not provided in any of the figures. The specification at 20, line 22-page 21, line 2 has been amended and no longer includes reference number 103. Withdrawal of this objection is requested.

§102 Rejections:

Claims 1-3 and 5-20 are rejected as being anticipated by Selzer (US Patent No. 7,074,187). This rejection is traversed.

Claim 1 is directed to an ultrasonic diagnostic apparatus that requires, among other features, a movement detection unit that analyzes a phase of the ultrasonic echo signal in a direction traversing the blood vessel so as to calculate a movement amount in each of a plurality of parts included in a blood vessel wall constituting the blood vessel and a vicinity of the blood vessel wall. Claim 1 also requires a boundary detection unit that detects a boundary position between the blood vessel wall and a blood flow region in a lumen of the blood vessel through which blood flows based on a variation in the calculated movement amount in each part. An advantage of these features is that a boundary position between a blood flow region and a blood vessel region can be detected more accurately than with a method based on a brightness change.

Selzer does not disclose or teach or suggest these features. In contrast, Selzer is directed to a system for improving ultrasound image acquisition and replication for repeatable measurements of vascular structures that uses a boundary detection method that creates a normal B-mode (echo) image based on a brightness change (see column 9, lines 30-48 and column 10, lines 36-43). Thus, if the brightness of an inner membrane of the blood vessel wall is low, it is difficult accurately detect the location of the blood vessel wall. For at least these reasons claim 1 is not suggested by Selzer. Moreover,

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nowhere does Selzer contemplate modifying its boundary detection unit from one based on brightness to one based on movement or providing a movement detection unit, as required by claim 1. Claims 2, 3 and 5-8 depend from claim 1 and should be allowed for at least the same reasons.

Claim 9 is directed to an ultrasonic diagnostic apparatus that requires, among other features, a movement detection unit that analyzes a phase of the ultrasonic echo signal in a direction traversing the blood vessel so as to calculate a movement amount in each of a plurality of parts included in a blood vessel wall constituting the blood vessel and a vicinity of the blood vessel wall. Claim 1 also requires a boundary detection unit that detects a boundary position between an inner membrane of the blood vessel and a blood flow region in a lumen of the blood vessel through which blood flows and a position of a middle membrane of the blood vessel based on a variation in the calculated movement amount in each part. An advantage of these features is that a boundary position between a blood flow region and a blood vessel region can be detected more accurately than with a method based on a brightness change.

Selzer does not disclose or teach or suggest these features. As discussed above, with respect to claim 1, Selzer is directed to a system for improving ultrasound image acquisition and replication for repeatable measurements of vascular structures that uses a boundary detection method that creates a normal B-mode (echo) image based on a brightness change (see column 9, lines 30-48 and column 10, lines 36-43). Thus, if the brightness of an inner membrane of the blood vessel wall is low, it is difficult accurately detect the location of the blood vessel wall. For at least these reasons claim 9 is not suggested by Selzer. Moreover, nowhere does Selzer contemplate modifying its boundary detection unit from one based on brightness to one based on movement or providing a movement detection unit, as required by claim 9. Claims 10-20 depend from claim 9 and should be allowed for at least the same reasons.

§103 Rejections:

Claim 4 is rejected as being unpatentable over Selzer in view of Li (US Patent Publication No. 2003/0114756). This rejection is traversed. Claim 4 depends from claim

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I and should be allowed for at least the same reasons described above. Applicants do not concede the correctness of this rejection.

Conclusion:

Applicants respectfully assert that claims 1-20 are in condition for allowance. If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.



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Respectfully submitted,

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